# COSC 2336 001: Programming Fundamentals III (F2F)
**Course Syllabus:** Fall 2021

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| Office Hours | Monday | Tuesday | Wednesday | Thursday | Friday | Online |
|---|---|---|---|---|---|---|
| | 9:00 – 9:30 | 9:00 – 11:00 1:30 – 2:00 | 9:00 – 9:30 | 9:00 – 11:00 1:30 – 2:00 | None | By Appointment as needed (Zoom) |

*This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities.*

*Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.*

**Catalog Course Description:** (3 Semester Credit Hours)
Further applications of programming techniques, introducing the fundamental concepts of data structures and algorithms. Topics include data structures (including stacks, queues, linked lists, hash tables, trees, and graphs), searching, sorting, recursion, and algorithmic analysis. Programs will be implemented in an appropriate object-oriented language.

**Prerequisite(s):** COSC 1337

**Student Learning Outcomes:**

- Design and develop programs that implement basic data structures, including stacks, queues, linked lists, hash tables, trees, and graphs.

- Apply recursive techniques and algorithms to solve problems.

- Implement searching and sorting algorithms.

- Understand algorithm efficiency, Big-O notation, and why it should be considered in programming.

- Analyze and select appropriate data structures to implement a solution to a problem.

- Design and implement data structures using classes and incorporating object-oriented concepts.

- Demonstrate best practices of software development including testing, validation, and documentation.

**Evaluation/Grading Policy:**
Programming Assignments: 25%
Quizzes: 25%
Midterm Exam: 20%
Final Exam: 20%
Class Participation / Homework / Practice Assignments: 10%

*Programming Assignments*
There will be several programming assignments during the semester. Each of these program assignments will require hands-on demonstration of lecture concepts. Each student is required to complete their own program code. Helping other students figure out compile and logic errors is acceptable but sharing of files between students is not allowed and will be considered cheating.

*Quizzes*
There will be a quiz over each chapter or main topic covered in the course. NOTE: The same textbook is used for Programming Fundamentals I and II so we will NOT be covering the entire book in this course.

*Midterm Exam*
The Midterm Exam will consist of two parts. There will be a concepts section that will contain questions about covered topics. There will also be a programming section in which students will be required to complete a coding activity to demonstrate the ability to implement relevant concepts. One class meeting period will be provided for each part of the exam.

*Final Exam*
The Final Exam will consist of two parts. There will be a concepts section that will contain questions about covered topics. There will also be a programming section in which students will be required to complete a coding activity to demonstrate the ability to implement relevant concepts. One class meeting period will be provided for each part of the exam.

*Class Participation / Homework / Practice Assignments*
Example programs will be written during class to illustrate the course lectures. In order to gain experience with writing code, students should write the programs at the same time as the instructor. Activities such as these will count towards class participation. Other course assignments such as review questions may also be covered in class.

**Required Instructional Materials:**

*Required Textbook*
Title: C++ Programming: Program Design Including Data Structures, 8th edition
Author: Malik, D.S.

**Publisher:** Course Technology / Cengage

**ISBN Number:**
ISBN-13: 978-1337117562
ISBN-10: 1337117560

**Optional Instructional Materials:**
C++ Tutorials and YouTube Videos

**Minimum Technology Requirements:**
You will need to have a dependable personal computer (preferably running Windows) to complete the programming assignments for this course. You will also need a C++ Compiler for your programming assignments. A free Dev C++ compiler is available. I will give you more information on this later. The Orwell Dev C++ is an updated version of the Dev C++ compiler and is the best choice for Windows 8 and later operating systems. For MAC OS users, the Codeblocks IDE is a good alternative. There is also a version of Codeblocks for Windows and Linux.

**Required Computer Literacy Skills**: Basic computer literacy skills and abilities such as typing, copy / paste, file management are required in order to be successful in this course.

**Course Structure and Overview:**
This face to face course will be held through in class meetings. Class meetings will consist of lectures and example program activities. Some lecture videos have been recorded from previous semesters and can be watched outside of class to enhance student learning. The following general course information provides additional detail regarding expectations for the course.

Several elements are essential for your success in this course. You will need to be aware and understand these fully prior to starting the course.

- Programming courses require extensive engagement (with other students, the instructor, and the course materials) as well as timely completion of assignments. Assignments are due by the posted due dates so keeping up with the schedule is essential to your success. Your personal schedule must allow you to keep up with the due dates for the readings, assignments, quizzes, and exams.

- You must have continuous access to a working and dependable computer and Internet provider.

- A USB flash drive for file storage and transport as well as headphones for listening to online lectures and other videos is recommended.

- Be prepared and read the appropriate material in the textbook as well as view the related course videos.

- You are expected to turn in completed assignments through Blackboard. Any assignments marked late by the interface may receive up to a 10% late penalty.

- No assignments will be accepted unreasonably late.

- Unless specifically indicated by the instructor, collaboration on assignments among students is not intended or allowed. Assignments are to be performed individually, and any material handed in by a student should represent that student's own work.

- If two students turn in assignments that are identical or very nearly identical, BOTH students will be given a 0 for that assignment. Don't copy another student's work, and don't let someone else copy yours.

**Communications:**
While most questions can be answered during, before, or after class with the course instructor, some students might need to communicate outside of class. The best method for communication with the instructor is through email wmcwhorter@ntcc.edu Every effort will be made to respond within 24 hours to student emails. It might take up to 48 hours on weekends. Students can also communicate in person outside of class by visiting the instructor during official office hours.

**Institutional / Course Policies:**

*Policy Regarding Face Coverings*
In order to promote safety from the current Coronavirus pandemic, students will be required to wear a face covering at all times during class meetings. Social distancing will also be practiced and encouraged by proper spacing of student workspaces.

*Student Conduct in Class Policy*
Any acts of classroom disruption that go beyond the normal rights of students to question and discuss with instructors the educational process relative to subject content will not be tolerated, in accordance with the Academic Code of Conduct described in the Student Handbook.

*Attendance*
Students are expected to attend all class meetings. The student is responsible for obtaining material distributed on class days when he/she was absent. This can be done through contacting a classmate who was present or by contacting the instructor during her office hours or other times. Contact your instructor by phone or email should you not be able to attend class. Please see the schedule of classes for the last day to withdraw. Religious Holy Days: please refer to the current Northeast Texas Community College Student Handbook.

*Electronic Devices in Class Policy*
Cell phones should be placed on silent or vibrate in the classroom. In emergency situations, if not during lecture, the student may ask permission to step outside the classroom and take their calls. Text messaging during class is a distraction for the completion of work. The first time a student is caught interacting with the phone rather than working, the phone will be taken from them until the end of the period. After the second time, the student will be asked not to bring the cell phone to class. If these guidelines are not followed, further disciplinary action will be taken which could include reduction in

overall grade. Reasonable laptop-size computers may be used in lecture for the purpose of taking notes or completing assignments.

*Withdrawal*

Students who wish to drop the course must do so by the deadline for student-initiated withdrawal.  If circumstances cause you to stop attending classes, then you must still officially withdraw or expect to receive and F in the course.  In addition, the instructor may withdraw a student from the course if the student fails to attend three consecutive class meetings.

**Video Recording of Course Activities**

Certain portions of this course may be recorded via video conferencing software to assist students in course material review or later viewing by a student who was not able to attend the live session.  The recordings will be made available only to students within the course and will cease to be available upon completion of the course.  Students may not retain, reproduce, or share recordings.

**Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements**

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to, online through the Blackboard Learning Management System, online conferencing, email messaging, and/or an alternate schedule.  It is the responsibility of the student to monitor NTCC's website (http://www.ntcc.edu/) for instructions about continuing courses remotely, Blackboard for each class for course-specific communication, and NTCC email for important general information.

Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid).  Should this be the case, every effort will be made to continue instruction in an alternative delivery format.  Students will be informed of any changes of this nature through email messaging and/or the Blackboard course site.

**NTCC Academic Honesty/Ethics Statement:**

NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook.  Refer to the student handbook for more information on these subjects.

**ADA Statement:**

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in

Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

**Family Educational Rights and Privacy Act (FERPA)**:
The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

**Tentative Course Timeline (NOTE: instructor reserves the right to make adjustments to this timeline at any point in the term) – See following sheet**

# COSC 2336 Programming Fundamentals III (Data Structures)

## Tentative Schedule – Fall 2021

| Week | Monday of the week | Topic |
|------|--------------------|-------|
| 1 | August 23 | Course Introduction<br>Review of Object Oriented Concepts |
| 2 | August 30 | Pointers, Classes, Virtual Functions, Abstract Classes, and Lists |
| 3 | September 6 | Overloading and Templates<br>Exception Handling |
| 4 | September 13 | Recursion |
| 5 | September 20 | Linked Lists |
| 6 | September 27 | Linked Lists |
| 7 | October 4 | Stacks and Queues |
| 8 | October 11 | Stacks and Queues |
| 9 | October 18 | **Midterm Exam** |
| 10 | October 25 | Searching and Sorting Algorithms<br>Hash Tables |
| 11 | November 1 | Searching and Sorting Algorithms<br>Hash Tables |
| 12 | November 8 | Binary Trees |
| 13 | November 15 | Binary Trees |
| 14 | November 22 | Graphs |
| 15 | November 29 | Standard Template Library (STL) |
| 16 | December 6 | **Final Exam** |